Black-footed Ferret
and Its Habitat

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Black-footed Ferret
and Its Habitat

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Introduction

This publication has been developed as an attempt to summarize the exisitng information on the black-footed ferret (Mustela nigripes) . It is particularly directed toward examining the historical distribution, present status, and habitat relationships of the animal. As the literature search and correspondence with persons knowledgeable about the black-footed ferret progressed, it became obvious that we know relatively little about the species as compared to almost all other wildlife species in North America. The reason seems to be because of the relative small numbers of ferrets, the difficulty in observing them outside of their burrows, and the small number of people actively searching for them.

Because of the difficulty in locating and studying the black-footed ferret, information about it is often sketchy and conflicting. However, we have attempted to summarize what is known, and hope that this summary will serve in making current land-use decisions, and that it will point out where additional research is needed.

Historical Perspective

The historical range of the black-footed ferret has been mapped by Snow (1972) and Clark (1974). The range boundaries of both reports are essentially the same, and have been combined to develop the map for Figure 1. This range corresponded closely with that of the black-tailed prairie dog (Cynomys ludovicianus) and the white-tailed prairie dog (C. leucurus) on the

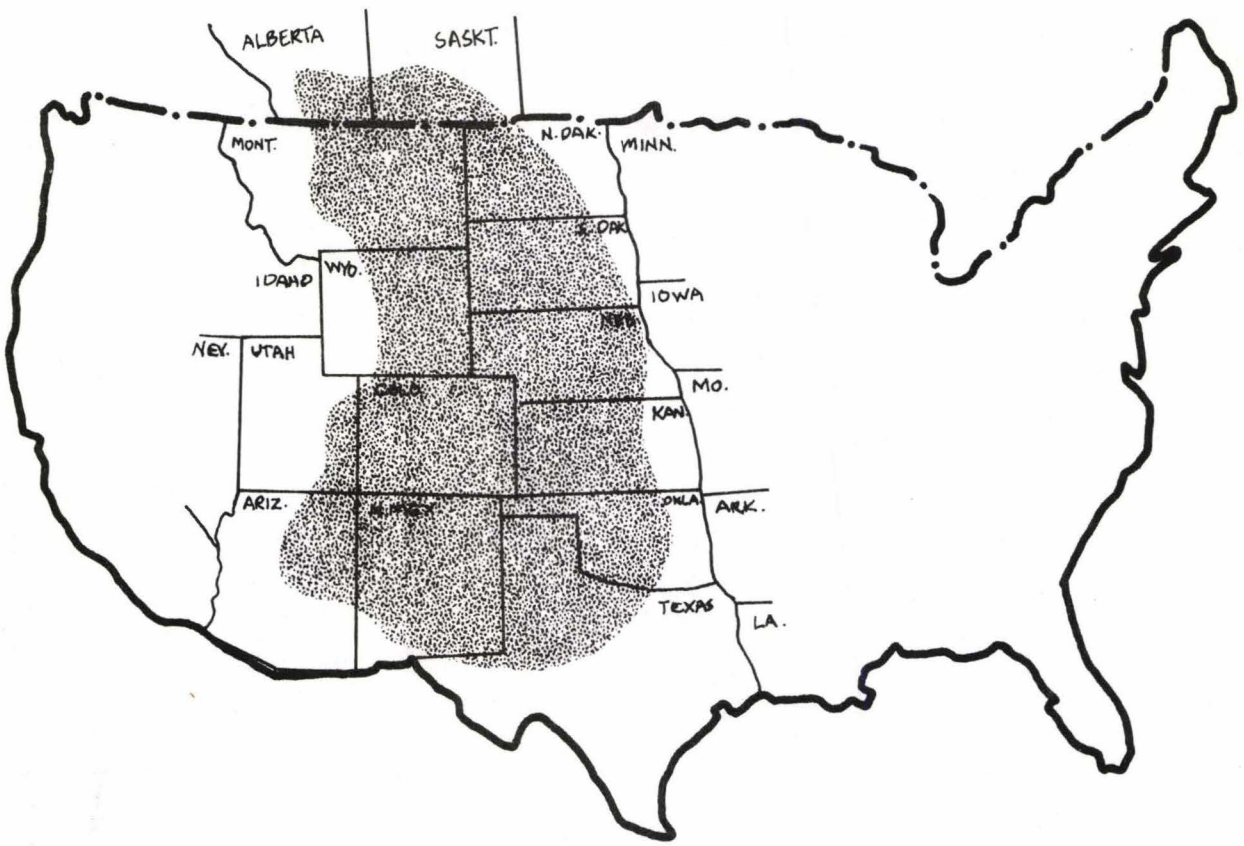

Figure 1. Historic range of the black-footed ferret (redrawn from Snow (1972 and Clark (1974).

mid- and short-grass prairie region of North America (Linder and Hillman 1973). They were also present in semi-desert and desert areas of the western extension of their range (Hall and Kelson 1959). They were reported by Caras (1966) to occur at elevations to 10,500 feet, while Seton (1929) reported that they were "rarely found at high elevations, but reports come from 3400 meters (11,050 feet) in alpine meadows and timber."

Very few accounts of ferret sightings were recorded prior to 1920 except for instances of skins being used as ceremonial ornaments by Crow, Blackfeet, and Cheyenne Indians (Clark 1972a, Peterson and Berg 1954). The lack of sightings before 1920 was possibly due to only a few people being in areas of ferret activity, or to a very small, widely dispersed population of ferrets throughout their range (Proceedings Symposium on Endangered and Threatened Species of North America 1974). Most sightings since the 1920's have occurred within a 10-mile radius of active prairie dog colonies (Hillman 1968a).

Present Distribution and Status

The present distribution of the black-footed ferret is essentially the same as the former distribution, except that "evidence is pointing to the existence of very limited numbers over most of the former range: Montana, Wyoming, Colorado, New Mexico, Arizona, Texas, Oklahoma, Kansas, Nebraska, South Dakota, and North Dakota" (Snow 1972). Figure 2 shows the range presently occupied by the ferret. Almost all of the recent sightings have been in South Dakota (Arvey et al. 1950, Cahalane 1954, Cochrum 1960, Crabb et al. 1950, Fichter et al. 1953, Fortenberry 1970, Henderson 1968, Hershkovitz 1966, Hoffman et al. 1969, IUCN 1968, Jones 1964, Lechleitner 1969, Linder et al. 1972, USDI 1968).

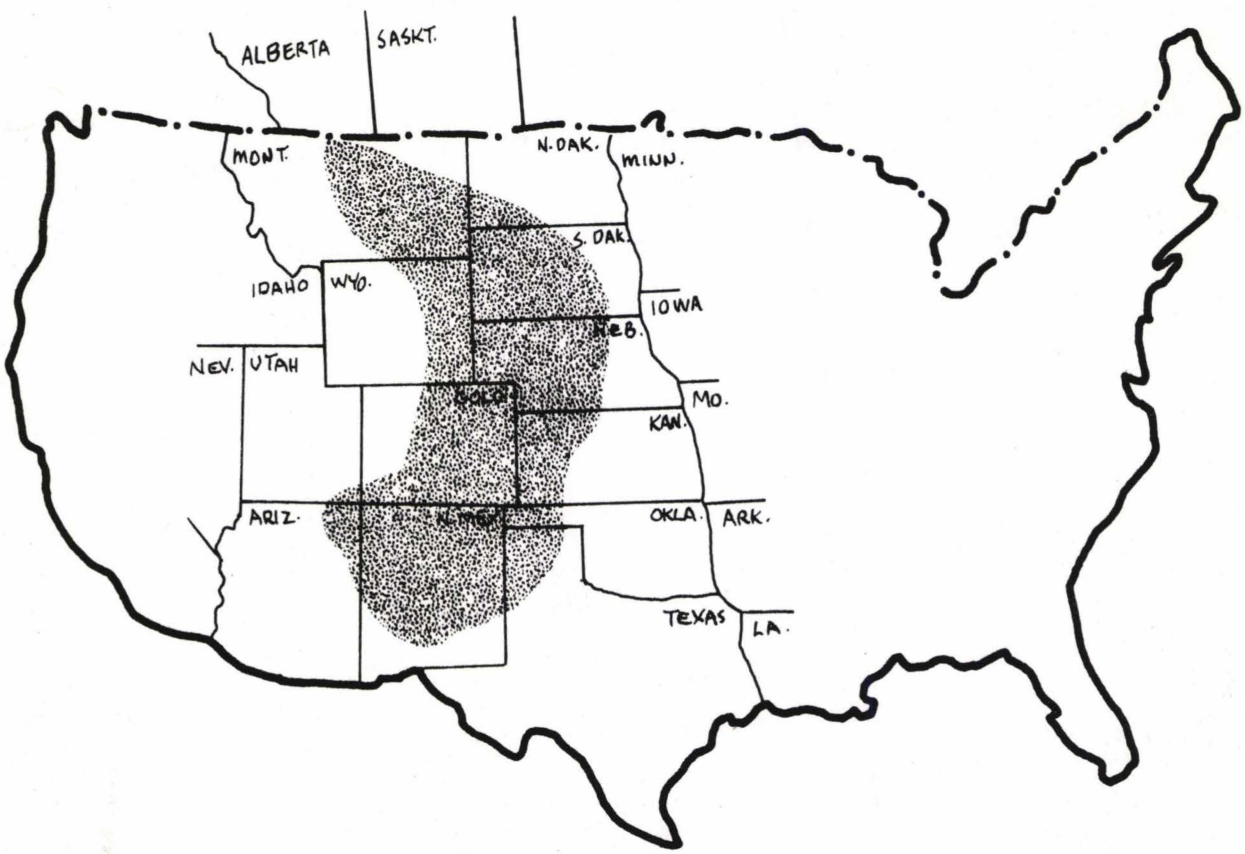

Figure 2. Known ferret inhabitation (Cahalane, 1954).

Most recent sightings have occurred near prairie dog colonies, mainly because searches have been concentrated in these areas. Ferrets apparently have relied upon prairie dogs as their major source of food and have used the prairie dog burrows for shelter. They have become so reliant upon the prairie dog that their existence may be determined by the number, size and distribution of prairie dog colonies. There has been a decline in prairie dogs with the development of the prairie states as agricultural and livestock centers. A concentrated trapping and shooting program aimed at eliminating the prairie dogs has greatly reduced the size and number of the active towns.

In 1964 the black-footed ferret was placed on the endangered species list. Since that time many reconnaissance programs have been developed to determine the present status of the prairie dog and black-footed ferret in North America. The following is an account of the present distribution of the ferret in states where they are known to occur.

South Dakota

There have been more than 400 sightings of ferrets in South Dakota since 1889, with most of these occurring in the south-central portion of the state (Linder et al. 1972). Mellette County has recorded over one-fourth of the sightings. The number of sightings per county from 1889 to 1972 are shown in Table 1.

Montana

The present status of the black-footed ferret in Montana is unknown. The last specimen to be obtained was found near Alzada in Carter County in 1953. Since then only one verified sighting has been recorded for the state (Flath 1976). Both black- and white-tailed prairie dogs inhabit the state,

Table 1. Sightings of Black-footed Ferrets in Montana, North Dakota, South Dakota, and Wyoming.

State	County	No./ County	Source of Information	Dates Covered
Montana	Teton	1	Linder et al. (1972)	1910-1972
	Wheatland	1		
	Yellowstone	1		
	Bighorn	4		
	Rosebud	5		
	Custer	2		
	Power River	4		
	Carter	1		
North Dakota	Billings	4	Bishop (1973)	1910-1973
	Emmons	1		
	Dunn (?)	1		
	Mercer	1		
	Golden Valley	2		
	Slope	2		
	Adams (?)	1		
	Burleigh	1		
	Kidder	1		
	Bowman	3		
	Mountrail	1		
	Morton	2		
	Unknown	5		
South Dakota	Harding	9	Linder et al. (1972)	1889-1972
	Butte	1		
	Custer	8		
	Perkins	13		
	Meade	12		
	Pennington	24		
	Shannon	19		
	Corson	7		
	Ziebach	18		
	Dewey	13		
	Haakon	23		
	Stanley	3		
	Jackson	9		
	Jones	5		
	Washabaugh	33		
	Mellette	107		
	Bennett	4		
	Todd	9		
	Campbell	1		

Table 1 Cont.

State	County	No./ County	Source of Information	Dates Covered
South Dakota	Walworth	4		
	Potter	1		
	Sully	19		
	Hughes	7		
	Lyman	14		
	Tripp	11		
	Faulk	8		
	Hyde	4		
	Hand	4		
	Buffalo	3		
	Jerauld	2		
	Beadle	1		
	Drule	1		
	Gregory	3		
	Lake	1		
Wyoming	Goshen	1	Clark (1973)	1851-1973
	Laramie	4		
	Weston	4	Clark (1975b)	1851-1974
	Carbon	25		
	Crook	6		
	Niobrara	4		
	Converse	2		
	Albany	22		
	Platte	4		
	Sweetwater	13		
	Fremont	8		
	Vinta	1		
	Campbell	4		
	Natrona	6		
	Park	1		
	Sheridan	2		
	Teton	1		
	Hot Springs	8		
	Washakie	3		
	Lincoln	2		
	Big Horn	4		
	Sublette	4		
	Unknown	2		

mostly east of the Continental Divide. The observations of black-footed ferrets by county are shown in Table 1.

The Charles M. Russell National Wildlife Range encompasses approximately 371,000 acres of potential prairie dog habitat; therefore, it may be Montana's most promising area for ferret detection. There is adequate habitat for the black-footed ferret but recent intensive surveys have not revealed any sightings (Larry Calvert pers. comm.).

Wyoming

An extensive statewide ferret search program was initiated in the early 1970's with the intent of obtaining public support in reporting possible ferret sightings. This program has been successful and has expanded the current knowledge of ferret distribution in Wyoming. Clark (1975b) conducted an extensive ferret search in Wyoming during 1973 and 1974, during which time he obtained nearly 250 alleged ferret sightings from the public. Of these, 131 sightings of at least 153 animals were evaluated as valid or likely so. The sightings from the 1973 and 1974 reports by Clark are summarized in Table 1.

Hall and Kelson (1959) delineated ferret distribution as encompassing only the eastern portion of the state which corresponded with the black-tailed prairie dog range, but the data of Clark (1975b) show that the ferret range is distributed throughout the state.

Since 1970, many more sightings have been recorded in the western half of the state than in the eastern half. The reason for this change is not clear. The increased sightings in the western portion could be a result of ferrets moving to that area, a decline in the eastern populations, or a more concentrated search program in the West. One major difficulty with visually observing ferrets in central and western Wyoming is the dense stands of sagebrush which obstruct vision.

Utah

Many recent unconfirmed sightings have come from the Price-Green River and Vernal-White River oil shale areas (William Leawell pers. com.). The last confirmed ferret observation was a reported road kill in 1952 (USDI 1970). Much of southeastern Utah, especially San Juan County, is potential prairie dog and ferret habitat (USDI 1970).

North Dakota

From 1910 to 1973, 25 ferrets have been reported for the state (Bishop 1973). These are listed by county in Table 1. Extensive agricultural and ranching operations primarily in the southwestern portion of the state have reduced the acreage of available habitat by 93 percent since 1939, with a corresponding decline of 89 percent in the number of prairie dog towns (Bishop and Culbertson 1973).

Nebraska

The black-footed ferret is found on the loess plains, mostly in the east-central portion of Nebraska. They are associated with the "hard lands." None have been observed in the sand hills region, although prairie dogs occur there (Fichter and Jones 1953).

Other States

Four prairie dog species are found in New Mexico. Over the years there has been a general increase in the number of colonies and recently some ferret activity has been noted (Linder and Hillman 1973).

In Oklahoma, there has been an increase in the acreage of prairie dog colonies with approximately 9,522 acres in 1968 increasing to 15,000 acres in 1973 (Linder and Hillman 1973). Three specimens have been collected, one in

Cleveland County in 1928 (Arvey and Glass 1950), one in Woods County at an unknown date (Lewis 1973) and one in Texas County in 1927 (Lewis 1973). Although no ferrets have been observed recently, there have been some above-ground ferret signs noted in Texas County (Fred Hassien pers. com.).

As of 1974, there were five possible sightings of seven ferrets near Monte Vista in Colorado. These were at an elevation of 8500 feet (Victor Keenan pers. com.).

As far as can be determined, there have been no records of ferret activity in Idaho.

No sightings have been recorded in Nebraska since 1948 (Linder and Hillman 1973).

In Kansas, several unconfirmed reports of ferrets are currently under investigation in the west-central and north-western portions of the state. Signs and sightings of ferrets at a prairie dog town in Cheyenne County recently have indicated their presence there, although no photographs of the animals have been taken (Patricia Latas pers. com.).

Captive Ferrets

Three male and two female ferrets are presently being studied in Maryland at the Patuxent Wildlife Research Center. To date there has been no success in getting them to breed in captivity. Currently underway in conjunction with the ferret studies is a program which will hopefully train a dog for possible use in scent detection of ferrets in the wild (Erickson 1975).

BLM Land

In Colorado, Montana, New Mexico and Utah alone there are over 30 million acres of BLM land which has for the most part remained unsurveyed for possible ferret habitat and signs of use. Much of this land is potential prairie dog and ferret habitat and it should be surveyed in detail (Linder and Hillman 1973).

Black-footed Ferrets and Prairie Dogs

Prairie dogs in North America at the turn of the century were estimated to number over five billion (Seton 1929). Since they were located in short- and mid-grass prairie regions, they became dominant factors of contention when agricultural and livestock interests spread into these regions. Widespread overgrazing of the region by livestock reduce the desirable grasses and favored an increase in the weedy plant species. Cattlemen claimed that the prairie dogs were eating the vegetation that was needed for livestock forage. Also, the burrows and mounds were a hazard to livestock and to a horse and rider moving across the town. Thus, a widespread eradication program ensued to rid the range of the prairie dog. Fichter (1953) stated that, ". . .a large population of prairie dogs is often an effect rather than a primary cause of range deterioration. .

Complete eradication of the prairie dog was attempted through shooting, trapping and poisoning programs. Poison grain was available from County Agricultural Extension Agents for use by anyone who wished to poison prairie dogs. The prairie dogs were considered vermin and were subjected to intense hunting at all times of the year. They were considered good "target practice" and Sunday afternoon shooting contests were commonly staged to see who could shoot the most "dogs" and prevent them from getting back into their burrows. The drastic reduction in the number of prairie dogs, plus the assumption that the black-footed ferret is dependent upon the prairie dog towns for its habitat, has recently led to a general concern to retain prairie dog towns, particularly on public lands. The use of the poison sodium fluoroacetate (commonly known as 1080) was banned on all public lands in 1972. This poison had been used extensively in prairie dog eradication programs.

Even with the widespread attempts to eradicate the prairie dog, its high fecundity made the job very difficult. With an 80 to 90 percent reduction in the population of a colony, the remaining survivors could repopulate the town to the original level within six years (Linder and Hijlman 1973).

Since the prairie dog appears to be the major food item of the black-footed ferret, there has been a widespread concern that the prairie dog poisoning programs also kill the ferrets, either directly or as a result of the loss of food. This has not been substantiated because prairie dogs generally died underground in their burrows and ferrets fed on them there. No ferrets are known to have died from 1080, but the general decline over the years in the number, size and distribution of prairie dog colonies has certainly affected the welfare and general distribution of the ferret.

Most ferret sightings have been associated with either black- or white-tailed prairie dogs. The former dominates the dry upland prairies while the latter prefers mountain valleys or shrub-grassland communities generally in the southwestern part of the range. The white-tailed prairie dog hibernates up to four months while the black-tailed prairie dog does not. Ferrets associated with the white-tailed prairie dog must change their diet during the period when it is hibernating. Potential prey of the ferrets might be field mice (Peromyscus spp.); ground squirrels (Citellus spp.); cottontail rabbits (Sylvilagus floridenus); pocket gophers (Geomys bussarius); and ground-nesting birds (Henderson et al. 1974).

The white-tailed prairie dog differs from the black-tailed prairie dog not only by hibernating, but also by having smaller colonies, sometimes being carriers of bubonic plague, and never plugging up burrows being used by ferrets (Clark 1975b).

In South Dakota the prairie dog towns vary in size from 15 to 100 acres. The average size town where ferrets have been observed is 40.4 acres while the average size for all the towns so far studied in South Dakota is 21.5 acres (Linder and Hillman 1973 , South Dakota Coop. Wildl. Res. Unit 1964). The location of colonies varies considerably with respect to slope, exposure, vegetation, soil, temperature and moisture regimes (Stromberg 1975). In general, they ". . . expand away from trees, large rocks, steep slopes, high water tables, or predator cover. . ." (Bishop 1972). With an increase in the town size there is a corresponding increase in wind and water erosion as the prairie dogs eat the surrounding vegetation, which usually includes buffalo grass (Buchloe dactyloides), blue grama (Bouteloua gracilis), western wheatgrass (Agropyron smithii), little bluestem (Andropogan scoparius), green needlegrass (Stipa viridula), sand dropseed (Sporobolus cryptandrus) and assorted forb species (Hillman 1968a). It has not been fully substantiated whether ferrets actually control the population numbers of prairie dogs since the number of prairie dogs consumed per day by one ferret still remains unknown (Hillman 1972). Possible prairie dog and ferret predators include badgers (Taxidea taxus), domestic dogs, coyotes (Canis latrans), great horned owls (Bubo virginianus), golden eagles (Aquila chupaetos canadensis), and man (Henderson et al. 1974).

Detection of the Presence of Ferrets

The greatest number of ferret sightings over the years has been in South Dakota, but on the average 18.3 hours of observation were required for each sighting (Fortenbery 1970). Summer is probably the best time to observe the ferrets because the young of the year tend to be very active above ground; however, they have nocturnal activity patterns at this time which make night lighting the only practical means of visual observation. They have been noted

to be active mostly from dusk to midnight and again from 4 a.m. to mid-morning (Hillman 1968b).

In the fall and spring black-footed ferrets are more diurnal but even then sightings are rare. In the early fall the young often disperse from their natal colony, which accounts for most of the sightings located away from active prairie dog colonies.

Ferrets often leave signs or tracks above ground so that some evidence of their presence can be obtained. For example, their tracks can often be observed following a fresh snowfall. The tracks resemble those of a weasel or mink, and care must be exercised to not confuse them. Ferrets have also been known to tunnel under the snow so that their presence may be detected in this manner (Linder and Hillman 1973).

The observation of scats as an indication of ferret presence is limited. The scats are deposited deep in the burrows, thus making them difficult to find. Several burrows used by ferrets have been excavated in South Dakota. These burrows have ranged from 13 to 109 feet long and from 4 to 14 feet deep (Linder 1970).

One of the most observable signs of ferret presence in a prairie dog town is the trenchs which they construct at the burrow entrance. These trenches are 3 to 5 inches wide and range from 1 to 9 feet long. These probably indicate the expansion of the burrow by the ferret (Henderson et al. 1974).

Another sign of ferret presence is prairie dog skulls and remains that have tooth marks at the base of the head (Linder and Hillman 1973). It is believed that ferrets kill prairie dogs by attacking the throat, then usually drag the kill down into the burrow to eat it. Thus, the kills and remains are not usually readily observable.

Habitat Relationships

The black-footed ferret is generally a resident of the short and mid-grass prairies, originally occurring from southern Alberta and Saskatchewan south to Arizona and Texas (Henderson et al. 1974, Linder and Hillman 1973). However, the vegetation types, elevations and types of terrain where they have been observed vary considerably. Clark (1974) reported that "recent sightings on ferrets from western Wyoming show that nearly all ferret sightings on whitetailed prairie dog colonies are adjacent to relatively extensive meadows along stream courses." Black-footed ferrets are found in loess plains ("hardlands") region of Nebraska, a possible correlation between land type and habitat requirements (Fichter and Jones 1953). Since prairie dogs are found in the sandhills region, it is possible that some ferrets also occur there.

Ferrets have been found in sheep sheds (Grinnell 1896), in haystacks, under buildings, and in ground squirrel colonies in South Dakota (Henderson et al. 1974); and in a wheat field (Le Deoyt 1970). However, most sightings have been at or near prairie dog towns. The abundance of observations at prairie dog towns would indicate that these are a major component of ferret habitat.

The major food item of the black-footed ferret is the prairie dog. Sheets and Linder (1969) obtained 56 scats from excavated burrows in South Dakota. Of these, 51 contained prairie dog remains and 19 contained mouse remains. Of the total animal material in thescats, 82% was prairie dog remains.

Linder (1970) obtained 82 ferret scats in a study in South Dakota. He reported that prairie dog remains were found in 91% of the scats and made up 86% of the animal matter (by weight) in the scats. Mice remains were found in 26% of the scats and made up 14% of the animal matter.

Snow (1972) stated that the prairie dog is the main food item. Henderson et al. (1974) stated that ferrets also eat rodents such as field mice, ground squirrels and rabbits; birds such as burrowing owls and ground-nesting birds, and small reptiles. A captured young ferret in New Mexico ate almost anything offered (Aldous 1940).

In areas where the ferret is associated with a white-tailed prairie dog colony, the ferret probably is dependent on other sources of food at times. The white-tailed prairie dog hibernates for about four months during the winter, while the ferret does not. The ferrets may prey on other rodents during this period (Clark 1974).

Snow (1972) reported that ferrets "have been seen chasing birds and have been observed catching moths. They possibly eat snakes and ground squirrels and in captivity have also eaten commercial mink food, fish, liver, hamburger, pork, milk, rabbit and bread."

Most observations of black-footed ferrets have been in prairie dog towns. Since the most abundant food at these sites is the prairie dog, it is readily apparent that this food source would be highly important. However, the lack of intensive searches at sites such as ground squirrel colonies has left a void in our knowledge of the flexibility in food habits of the ferret. Whether the prairie dog is a "required" food item or just a "preferred" one remains to be established.

The need for drinking water by the ferret has not been established. Snow (1972) stated that "wild ferrets have never been seen drinking water, but captive animals have been observed to drink." Henderson et al (1974) were uncertain about whether drinking water is necessary. Water may be available at the bottom of prairie dog burrows.

The black-footed ferret spends much of its time in a burrow. The ferret is capable of digging a burrow, as evidenced by observations of digging

by a male in captivity (Progulske 1969). However, it is assumed that the ferret ordinarily does not dig a complete burrow system, but instead appropriates that of a prairie dog, perhaps making some modifications (Henderson et al 1974).

The limited information about the habitat of the black-footed ferret prevents the development of a list of required components or characteristics of ferret habitat. The conceptual model presented in Figure 3 is derived from the existing knowledge of ferret habitat and should be tested and expanded or modified as additional studies are conducted.

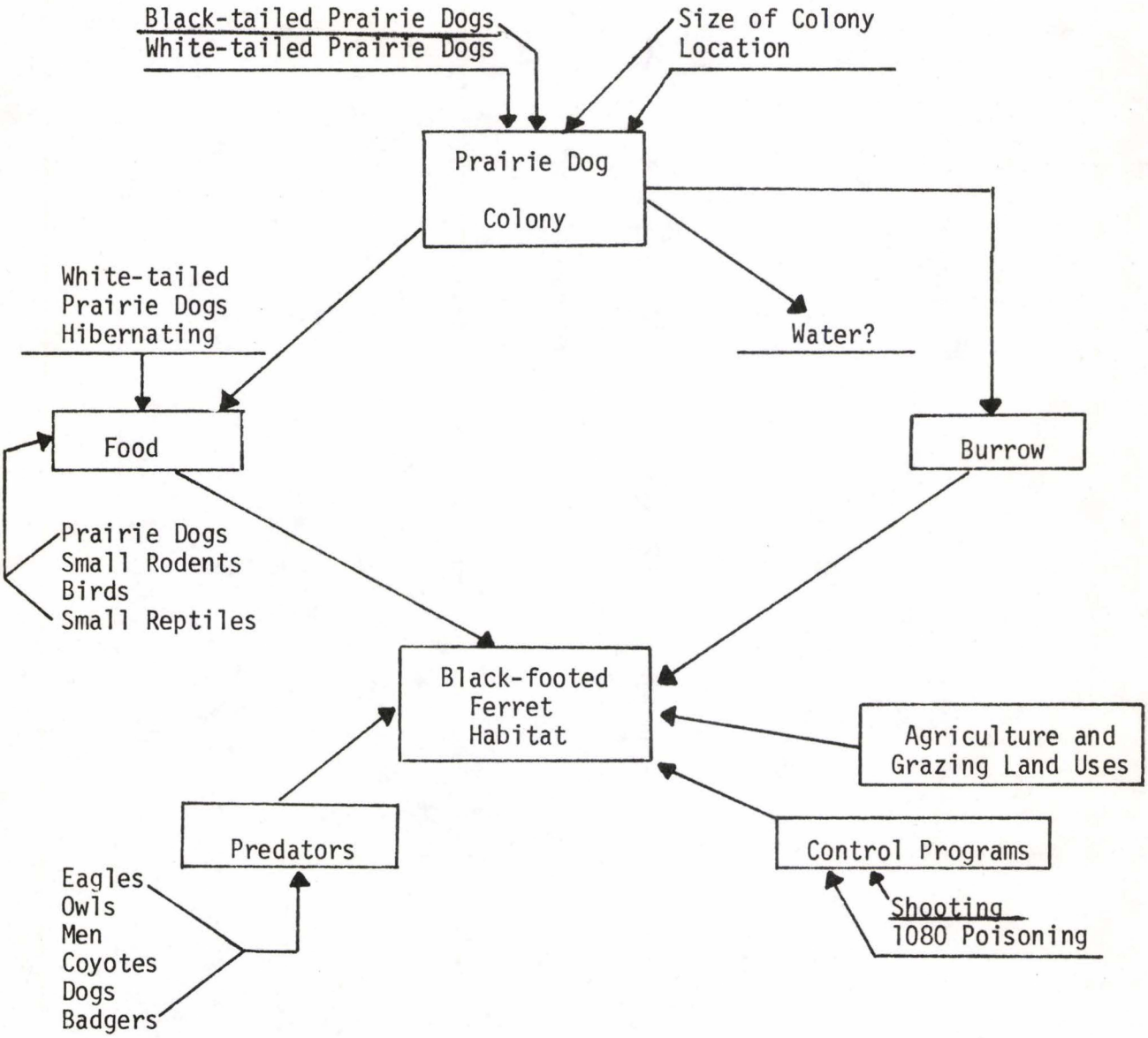

Figure 3. Conceptual Model of Black-footed Ferret Habitat.

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